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ROYAL BOTANIC GARDENS, KEW.

BULLETIN

OF

MISCELLANEOUS INFORMATION.

APPENDIX II.—1925.

REVIEW OF THE WORK OF THE ROYAL BOTANIC GARDENS, KEW, DURING 1924.

The early "Reports on Kew Gardens," prepared by Sir W. J. Hooker, were laid before Parliament and dealt with the general condition and progress of the Royal Gardens. These commenced soon after the Gardens became a National Establishment in 1841, and from 1855 to 1860 they were published in octavo form.

From 1861 to 1882 these Annual Reports were entitled "Reports on the Progress and Condition of the Royal Gardens, Kew." The Report for the year 1882, which appears to have been the last of the series, was not published until 1884.

These Annual Reports were then replaced by the *Kew Bulletin*, the first volume of which was published in the year 1887. The first number of the *Bulletin* was prefaced by the following notice :—

"It is proposed to issue from time to time, as an occasional publication, notes too detailed for the Annual Report on economic products and plants, to which the attention of the Staff of the Royal Gardens has been drawn in the course of ordinary correspondence, or which have been made the subject of particular study at Kew. It is hoped that while these notes will serve the purpose of an expeditious mode of communication to the numerous correspondents of Kew in distant parts of the Empire, they may also be of service to members of the general public interested in planting or agricultural business in India and the Colonies.

1st January, 1887. W. T. Thiselton Dyer, Director."

The *Bulletin* has, it is hoped, continued to fulfil the functions set out in this notice, and latterly in the first number of each year the chief points of interest, in connection with the work carried out at the Royal Botanic Gardens, have been reviewed and published among the Miscellaneous Notes.

In these brief reviews it has not been possible to deal adequately with the extensive and varied activities upon which the Staff has been engaged, or to indicate the world-wide character of the work of the Royal Botanic Gardens, in the Gardens

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proper, the Herbarium or the Museums and Laboratory. As a more lengthy review would unduly curtail the space devoted to the account of scientific investigation and research in the several numbers of the *Bulletin*, it has seemed more fitting to issue the review of the work of the year as a separate Appendix (No. ii).

A.W.H.

The Gardens.

The Gardens are now free to the public except on Students' Days—Tuesdays and Fridays—when as heretofore the charge for admission is sixpence.

The charge of one penny for admission, instituted during the War, was removed on April 21st, 1924.

The number of visitors to the Gardens in 1924 was 1,535,855. This was an increase of 349,193 over those recorded for the previous year. The increase on Students' Days was 2,867.

Among the distinguished visitors to the Gardens were His Majesty the King of Italy, who paid an official visit on 27th May and evinced very great interest in the collections, and Her Majesty the Queen of Roumania, who was conducted through the Gardens the following day.

The Emir of Katsina paid his second visit to the Gardens in the autumn, his previous visit having been made when he was on his way to Mecca in 1921.

Cedar Vista. For several years past, the long avenue extending from the Lake to the Pagoda, which is designated on the Key Plan of the Gardens as the Cedar Vista, has been very unsatisfactory. This vista, really one of the main arteries of the Gardens and forming the chief link between the eastern and western sides of the grounds at the south end, was opened up by Sir Joseph Hooker in 1871. It was planted by him on each side with Mount Atlas Cedars, but the width of the avenue did not allow sufficient space for these trees to take on their natural spreading form. Even if they could have done so the walk would have been transformed into a gloomy tunnel under which no turf could have survived. For the last thirty years at least the trees have been pruned periodically so as to provide a vista with sloping walls of verdure at the sides. Through this vista the entire Pagoda could be seen from the Sion Vista at the south end of the Lake. Owing to the narrowness of the promenade and the obstruction of light by the Cedars—which were 70 ft. and more in height—the grass in recent years has not been able to withstand the increased traffic at this end of the Gardens. It is a curious idiosyncrasy of the public that as soon as a track begins to form, everyone walks along it, however ample the space may be on either side, consequently wide, unsightly bare tracks have been formed.

The only way of dealing with the problem of this vista was to widen the promenade and let in more light by removing the two

rows of cedars from the central portion, leaving some at the ends to preserve as much as possible the old perspective. This has been done and the ground has been returfed where needed. It is hoped that the additional light and air now reaching the grass will enable it to remain in good condition throughout the summer.

GENERAL. Whilst a cool, moist summer, like that of 1924, may not be conducive to the development of a large crop of blossom for the following season, there is no doubt that it suits Kew better than a very hot, dry one, especially as regards the general appearance. The abundant rain has enabled the lawns to recover from the effects of 1921, and many trees and shrubs also have regained their vigour. During the early part of the summer most of the beds of roses in the new arrangement near the Palm House were in gorgeous blossom, but for the perfect development of the later autumnal flowers the weather was too dull and wet.

Although several more old beeches, debilitated by the drought of three years ago, died during the summer and have been since taken down, no notable tree has been lost, either through storm or decay.

The treatment of the paths with hot tar and pea gravel, commenced in 1923 (see *K.B.* 1924, p. 31), has been continued during favourable weather all the summer. Those previously tarred have proved quite satisfactory.

Owing to the builders' strike, extending over several weeks of the summer, the painting of several houses as originally planned had to be postponed for a year. The interior of the Water-lily house (No. 15) was the only one undertaken. One of the frames in the private frame ground ("Melon Yard") was widened and converted into a pit with a sunk central walk. The exposure of the plants whilst they are being attended to in severe weather will thereby be avoided.

Additions to the Gardens during the year included the gift of one hundred garden seats (see *K.B.* 1924, p. 173), and the erection of a new boathouse on the south side of the Lake.

Several important contributions to the various collections have been made during the year. The most valuable was a bequest of orchids by the late Hon. N. Charles Rothschild from the collections he had formed at Ashton Wold and Tring Park. Mrs. Rothschild very generously allowed Kew to select and bring away others besides the species actually mentioned by her husband in his will. As a result a large motor van-load of some 600 plants was transferred from Ashton Wold to our Orchid Houses in March, and a second consignment was brought from Tring later. Amongst the more valuable was a fine set of species of *Phalaenopsis*, including *P. Stuartiana* and a very fine specimen of *P. intermedia* var. *Portei*, which had been in cultivation at Tring for over forty years; *Bulbophyllum Fletcherianum*, *Catasetum tabulare*, *Schomburgkia undulata*, *Vanda Sanderiana*, *Bifrenaria Harrisoniae*, *Cirrhopetalum Medusae* and *Masdevallia muscosa*.

One of the best—certainly the most interesting—of the plant exhibits at the British Empire Exhibition at Wembley was that of the South African section. A Rock Garden was planted with a fine variety of the most characteristic succulents of the Dominion, excellently arranged and cared for by Mr. Frith. At the close of the Exhibition, by the courtesy of the High Commissioner, we had the privilege of selecting whatever we desired, with the result that several vanloads were transferred to Kew. Our collection of succulents was thereby considerably augmented, both by new species and by better examples than those already here. Amongst them were several species of the sphaeroid group of Mesembryanthemums, a large plant of *Testudinaria elephantipes* and one of *Cotyledon paniculata, Euphorbia obesa* and *E. multiceps*, both very distinct and interesting plants, Sarcocaulons, Hoodias and succulent Pelargoniums.

No group of plants in Kew suffered more from the salt-water episode of 1921 (see *K.B.* 1922, p. 6) than the Rhododendrons in the Himalayan House, many specimens being irretrievably injured in health. The restoration has now been practically completed, and a great help towards this were some Rhododendrons of the *Falconeri-grande* group given by Admiral Heneage-Vivian, who very kindly sent them all the way from his garden at Clyne Castle, near Swansea, to Kew by motor van.

The botanical exploration of Western China is still being carried on, and many packets of seeds collected by Mr. George Forrest have been given to Kew by Mr. J. C. Williams of Caerhays, to whom the establishment already owed so much. A notable consignment also from the same region was one of nearly four hundred packets of Rhododendron seed collected by Mr. Rock and presented by the U.S. Dept. of Agriculture. A large proportion of these were re-distributed amongst prominent cultivators of Rhododendrons in this country.

On December 28th the high tides and flood water caused by the heavy gales of the preceding few days completely breached the river bank a little upstream from the Brentford Ferry Gate. The Old Deer Park and Queen's Cottage Grounds were flooded and the rush of this water down the Ha-ha ditch, on the fall of the tides, widened the breach until a gap over twenty yards wide was made in the bank between the ditch and the Thames. The swirl of the waters through this gap undermined the retaining wall of the Gardens and caused a subsidence within the Gardens which engulfed two of the holly trees of the boundary screen. At the same time the excavations around the roots of the trees on the bank caused a large elm to fall across the gap. This tree fortunately proved of great value since it was able to be utilised as a base for props by which the retaining wall was saved from further destruction. With the gradual lowering of the river level the damage has been stayed and in due course it is hoped the river bank will be repaired. As, however, three authorites, the Office of Works, the Richmond Corporation, and the Thames Conservancy,

are concerned, the filling in of the breach may be somewhat delayed.

Some 59 cubic yards of soil have been needed to fill the hole inside the retaining wall caused by the sucking action of the flood water below the wall.

Publications.—Official publications connected with the Gardens have for some time been sold under arrangement with a contractor at the Kiosk in the wall near the Main Gate. From July 1st the sale of these Publications was resumed officially at a new Publications Kiosk which has been built behind Museum III at the north end of the Broad Walk. The old kiosk has been converted into a bicycle shed for the use ot the Herbarium Staff.

In addition to the Hand-lists, Guides and Bulletins previously published, a special series of picture postcards has been prepared illustrating various features of the Gardens and plants of special interest or value. Nine sets, each containing seven cards, have been published and are obtainable at a price of sixpence for a set or one penny each card. The front of the card bears a small descriptive legend explanatory of the picture. This series of cards is being extended and a new series of picture postcards in natural colours is in course of preparation.

A new Illustrated Guide, price one shilling, was published during the year. It contains a short historical notice, and a description of the Gardens to indicate to visitors the chief objects of interest. It is illustrated with thirty full-page photographs and contains a map squared for reference, and at the end a list of the more interesting plants to be found in flower at particular seasons.

The Popular Official Guide and the Hand-lists of Trees and Shrubs, Conifers, and Herbaceous plants have also been revised, and the new editions will be on sale early in the present year. The old Herbaceous List has been divided into three, and the new lists will deal with (1) Rock Garden Plants, (2) Herbaceous Plants and (3) Hardy Monocotyledons.

Additions to Gardens, 1924.—The number of separate consignments of living plants and seeds presented to the Gardens was 749, an increase of 115 on that of 1923, and the largest experienced in the history of the establishment. The most important were the following :—

Public Institutions :—

Aberdeen, Cruickshank Botanic Garden.—*Chirita tubulosa.*

Amani Institute, Tanganyika Territory.—Plants of *Cyathea usambarensis* and seeds.

Arnold Arboretum.—Plants and seeds, including *Aesculus Bushii, Amelanchier* spp., *Carya* spp., etc.

Bermuda, Dept. of Agriculture.—Bulbs of *Lilium Harrisii.*

Birmingham, Botanic Garden.—*Dionaea muscipula.*

Brignoles Botanic Station, France.—52 packets of seeds.

Buitenzorg, Botanic Garden.—Seeds of *Amorphophallus Titanum.*

Cambridge, Botanic Garden.—Plants and seeds.
Chelsea Physic Garden.—13 packets of seeds, and herbaceous plants.
Cyprus, Forestry Dept.— Seeds, including *Fraxinus velutina, Quercus coccifera.*
Dahlem, Botanic Garden.—55 packets of seeds, and cuttings of *Salix* spp.
Darjeeling, Lloyd Botanic Garden.—813 packets of seeds and a large and representative collection of Himalayan Orchids.
Edinburgh, Botanic Garden.—200 packets of seeds.
Entebbe, Forestry Dept., Uganda.—Seeds of *Cassia* spp.
Gambia, Dept. of Agriculture.— Seeds of *Borassus flabellifera.*
Glasgow, Botanic Garden.—Filmy ferns and stove plants.
Glasnevin, Botanic Garden.—Seeds, plants and cuttings.
Gold Coast, Forestry Dept.—Seeds of *Pentadesma butyracea* and *Mimusops* sp.
High Commissioner for the Union of South Africa.—Bulbs and plants from Cape Province.
Hyde Park.—Rhododendrons, bedding plants, etc.
Kirstenbosch Botanic Garden, Cape Town.—Seeds of *Erica* spp.
Leningrad, Botanic Garden.—65 packets of seeds.
Lisbon, Botanic Garden.—72 packets of seeds.
McGregor Memorial Museum, Kimberley.—Seeds of South African plants, including *Mundulea suberosa.*
Middle-Egypt Botanic Station, Matania-El-Saff.—Seeds, including *Anona Cherimolia.*
Montpellier Botanic Garden.—95 packets of seeds.
Ottawa, Dominion Experimental Farm.—85 packets of seeds.
Palermo, Botanic Garden.—65 packets of seeds.
Paris, Botanic Garden.—Seeds and plants, including *Encephalartos septentrionale.*
Peradeniya, Botanic Garden.—Seeds of *Hevea brasiliensis.*
Prague, Dendrological Society, Pruhonice.—A collection of hardy trees and shrubs, and herbaceous plants.
Pretoria, Division of Botany.—Seeds, including *Welwitschia mirabilis, Landolphia Kirkii* var. *delagoensis* and *Anthocleista zambesiaca.*
Rio de Janeiro, Department of Agriculture.—Plants of dwarf *Musa* spp.
Rouen, Botanic Garden.—41 packets of seeds.
Royal Horticultural Society.—Hardy herbaceous plants, trees and shrubs, and numerous seeds.
Singapore, Botanic Garden.—Tubers of *Dioscorea* spp., and seeds, including *Impatiens* spp.
Tiflis, Botanic Garden.—72 packets of seeds.
Trinidad, Dept. of Agriculture.—Bulbs of *Haemanthus* sp., a small collection of Cacti from the Island of Patos, palm seeds, plants of *Oncidium Papilio,* and orchids collected in the Tamana Hills.
U.S. Dept. of Agriculture, Washington.—Plants and seeds,

including *Kleinhovia hospita* and *Ilex paraguayensis* and 418 packets of seeds collected in Yunnan.

Private donors :—

Mr. J. H. Anderson, Southport.—A collection of filmy ferns.

Mr. S. C. Atchley, Athens, Greece.—Seeds, bulbs and plants from Crete.

Mr. F. R. S. Balfour, Dawyck.—Seeds, including *Juglans Sieboldiana*.

Mr. H. G. Bambridge, Khartoum.—*Cyperus* sp. from Lake Tana.

Messrs. Barr & Sons, Covent Garden.—New Zealand seeds.

Mr. A. C. Bartholomew, Reading.—Seeds and plants.

The Duke of Bedford, Woburn Abbey.—Plants, including *Corylopsis yunnanensis*, *Deutzia Mombezii*, etc.

Mr. E. A. Bowles, Waltham Cross.—Herbaceous plants and seeds.

Mr. D. Brodie, Abyssinia.—Crinums, *Kniphofia* spp., *Rosa sancta*, and numerous seeds collected in the neighbourhood of Addis Ababa.

Mr. N. E. Brown, Kew.—Seeds and numerous Cape succulents.

Mr. J. A. Campbell, Arduaine, Argyll.—Cuttings of *Opuntia* spp.

Messrs. Charlesworth & Co., Ltd., Haywards Heath.—A collection of Orchids.

Sir Jeremiah Colman, Gatton Park, Surrey.—Orchids, including *Bulbophyllum tremulans*.

Mr. M. T. Dawe, Sierra Leone.—Seeds of *Cola acuminata*, roots of *Zingiber officinale*, and bulbs of *Hippeastrum equestre*.

Miss A. V. Duthie, Stellenbosch.—Seven species of Cape Pelargoniums.

Mr. C. Eley, East Bergholt.—16 packets of seeds of trees and shrubs.

Major R. Emmett, Moreton Paddox, Warwick.—Hardy trees and shrubs, and primroses.

Sir G. Fenwick, New Zealand.—Collection of New Zealand seeds.

Major S. S. Flower, Tring.—Bulbs of *Crinum* spp. from Abyssinia.

Hon. Vicary Gibbs, Aldenham House, Elstree.—Plants and grafts of trees and shrubs.

Dame Alice Godman, Horsham.—Seeds collected in Uganda.

Sir H. Gibson, Buenos Aires.—Seeds of *Acrocomia sclerocarpa* from Paraguay.

Dr. M. Grabham, Kingston, Jamaica.—Numerous seeds including *Passiflora perfoliata*, *Tephrosia cinerea* var. *littoralis*.

Prof. H. Greenish, Pharmaceutical Society, London.—Bulbs of *Urginea indica*.

Commendatore C. Hanbury, La Mortola, Ventimiglia, Italy.—75 packets of seeds.

Marquis of Headfort, Kells, Co. Meath.—Plant of *Trematron Forrestii* and seedling Rhododendrons.

Mr. J. Hers, Lunghai, China.—Seeds of *Pistacia chinensis* and *Pinus Bungeana*.

Dr. A. W. Hill.—Orchids from Costa Rica, Trinidad and Jamaica.

Mr. E. M. Holmes, Ruthven, Sevenoaks.—Seeds of medicinal plants.

Mr. E. Jacobson, Fort de Kock, Sumatra.—Tubers and seeds of *Amorphophallus Titanum*.

Mr. G. A. Jones, San Fernando.—About 200 tubers of a species of *Nymphaea*, probably introduced from Demerara. (A large proportion of these were re-distributed.)

Dr. A. F. G. Kerr, Chiengmai, Siam.—Seeds, including *Nepenthes Thorelii*, and tubers of *Amorphophallus* sp.

Mrs. L. Langridge, Kenya Colony.—Seeds of indigenous plants of Kenya Colony and ground orchids.

Mr. C. H. Lankester, Costa Rica.—Orchids and fern spores.

Sir William Lawrence, Dorking.—Plants and seeds.

Mr. W. E. Ledger, Wimbledon.—Succulents.

Mr. G. W. E. Loder, Ardingly.—Plants and grafts.

Mr. C. Matthews, Salcombe.—Seeds of South American plants.

Mr. J. A. McPherson, Dunedin, N.Z.—Seeds of New Zealand plants, including *Ranunculus Lyallii*.

Mr. Norman Moody, British Columbia.—Seeds of *Larix occidentalis*.

Mr. C. T. Musgrave, Goldalming.—Seeds and plants.

Messrs. Oliver and Hunter, Dumfries.—Bulbs of *Lilium philippinense* var. *formosanum*.

Major A. Pam, Broxbourne.—Bulbs from Peru and collections of South American Orchids.

Mr. E. E. Pescott, Melbourne.—Corms of *Watsonia* hybrids.

Dr. R. Lloyd Praeger, Dublin.—Collection of *Sempervivum* spp.

Mr. G. Reuthe, Keston.—Hardy plants, including *Loropetalum chinense* and *Chimaphila maculata*.

Mr. L. A. M. Riley, Kew.—Seeds collected in the Canary Islands, Trinidad, Panama, etc.

Mr. F. A. Rodway, Nowra, N.S.W.—33 packets of seeds of Australian plants.

Mr. Lionel de Rothschild, Gunnersbury.—Nymphaeas and Rhododendrons, and 140 packets of seeds collected in Buenos Aires.

Messrs. Sanders, St. Albans.—Collections of Orchids and Sarracenias.

Mr. W. Schmidt, London.—Plants of *Dendrobium delicatum* and *D. speciosum* from Queensland.

Mrs. Sexton, Plymouth.—Plants and cuttings of *Mesembryanthemum* spp.

Mr. T. Sharp, Westbury.—Succulents and seeds of Cape plants.

Mr. F. L. Skinner, Dropmore, Manitoba, Canada.—Plants of *Symphoricarpus albus*, and bulbs of *Lilium* spp.

Mr. Lewis Smart.—Fruits of *Elaeis guineensis* from Sumatra.

Major A. A. Dorrien Smith, Tresco, Isles of Scilly.—Seeds of *Puya chilensis*.

Mr. J. D. Snowden, Uganda.—Collections of Orchids.
Mrs. B. Stuart, Ross-on-Wye.—Seeds collected in Alaska.
Prof. W. Trelease, Illinois, U.S.A.—*Agave Letonae.*
Messrs. R. Veitch & Sons, Exeter.—Plants of *Clematis indivisa* var. *lobata.*
Messrs. R. Wallace & Co., Ltd., Tunbridge Wells.—A collection of garden varieties of *Iris.*
Capt. O. E. Warburg, London.—Hardy Heaths.
Mr. J. H. Watson, Withington.—Bulbs of *Lilium* spp.
Mr. P. D. Williams. St. Keverne.—Trees and shrubs.
Miss E. Willmott, Warley, Essex.—Herbaceous plants and seeds.
Rev. Carno-Wilson, Bath.—Grafts from his female tree of *Ginkgo biloba.*

Distribution of Plants and Seeds.—The usual distribution of surplus plants from the various collections was made, either in exchange with botanic gardens, nurserymen, etc., or as gifts to educational institutions. The total number of packets of seeds distributed was:—hardy trees and shrubs 4,028, hardy herbaceous plants 5,710, a considerable increase over the 1923 distribution. The most important of the seeds obtained for special distribution were *Pistacia chinensis, Larix occidentalis, Pinus Bungeana, Puya chilensis, Pentadesma butyracea, Mimusops* sp., *Cola acuminata, Aesculus californica,* and *Elaeis guineensis.* Plants of Para Rubber (*Hevea brasiliensis*) were raised from seed received from Peradeniya and were distributed to other botanic gardens and to the colonies.

Wardian cases of plants were sent to the Botanic Gardens of Penang, Dunedin, and Kingston, Jamaica. Other Wardian cases were despatched to Lady Thomson, Georgetown, British Guiana, and to Miss Welsford, Mycologist, Zanzibar.

The recipients of plants, etc., from Kew included the following:—

Arnold Arboretum.—Plants and seeds of trees and shrubs.
Cambridge, Botanic Garden.—Greenhouse and tropical plants.
Edinburgh, Botanic Garden.—Plants and seeds.
Forestry Commission.—Cuttings of *Salix caerulea.*
Hyde Park.—Hardy Bamboos.
Imperial War Graves Commission.—Seeds of *Cotoneaster rotundifolia* and *Genista aetnensis.*
Manchester Parks Dept.—Cuttings and plants of *Populus* spp.
Reading, University College.—Grafts of *Prunus* and *Pyrus* spp.
Royal Horticultural Society.—Cuttings of *Cistus* spp.
Sarawak, Dept. of Agriculture.—Plants of *Bromelia Magdalenae.*
High Commissioner for the Union of South Africa.—Seeds of *Victoria Regia.*
Trinidad, Botanic Garden.—Collection of *Crinum* and *Clivia* spp.
U.S. Dept. of Agriculture, Washington.—Seeds and plants of *Cordeauxia edulis,* cuttings of *Cryptostegia grandiflora* and

C. madagascariensis, *Sansevieria* spp., and seeds of *Davidia Vilmoriniana*, *Pyrus sikkimensis*, *Platanus acerifolia*, and *Quercus Lucombeana*.

Mr. S. C. Atchley, Athens, Greece.—Seeds and cuttings of *Cistus* spp.

The Duke of Bedford, Woburn Abbey.—Trees and shrubs.

Mr. F. R. S. Balfour, Dawyck.—Hardy Bamboos and seeds.

Mr. W. Miller Christie, Emsworth.—Alpines.

Clapham Churchyard, S.W.—50 hardy trees and shrubs.

Mr. C. Eley, East Bergholt.—Hardy trees and shrubs.

Major R. Emmett, Moreton Paddox, Warwick.—Trees and shrubs.

Hon. Vicary Gibbs, Aldenham House, Elstree.—Trees and shrubs.

Dame Alice Godman, Horsham.—Plants, including unnamed Rhododendrons.

Dr. F. H. Gravely, Egmore, Madras.—Collection of Succulents.

Admiral Heneage-Vivian, Blackpill, Glam.—Collection of Rhododendrons, seeds of *Lilium* spp., and *Primula* spp.

Messrs. Hillier & Sons, Winchester.—Plants and cuttings of hardy trees and shrubs.

Mr. A. B. Hughes, Port Nolloth, Namaqualand.—Plants of *Hevea brasiliensis*.

Capt. C. Ingram, Benenden.—Grafts and plants of *Prunus* spp.

Commander E. P. Jones, South Kensington.—A collection of seeds of *Crataegus* spp.

Emir of Katsina.—Seeds and plants, including *Acacia Farnesiana*.

Sir William Lawrence, Dorking.—Herbaceous and stove plants.

Mr. W. E. Ledger, Wimbledon.—Plants of *Ceropegia* spp.

Mr. G. W. E. Loder, Ardingly.—Plants, including *Arctostaphylos Manzanita*.

Hon. H. D. McLaren, Bodnant, Tal-y-cafn.—Rhododendrons.

Dr. B. Moiser, Northern Nigeria.—Plants and seeds.

Mr. C. Musgrave, Godalming.—Plants of *Primula* spp.

Major A. Pam, Broxbourne.—Hardy trees and shrubs.

Dr. R. Lloyd Praeger, Dublin.—Plants and cuttings of *Monanthes* and *Sempervivum* spp.

Sir John Ramsden, Gerrard's Cross.—Cuttings of *Populus Eugenei* and *P. trichocarpa* for Kenya Colony.

Miss Saunders, Stellenbosch, S.A.—*Pelargonium* spp. (scented forms).

Mrs. Sexton, Plymouth.—Plants and cuttings of *Mesembryanthemum* spp.

Major A. A. Dorrien Smith, Tresco, Isles of Scilly.—Miscellaneous plants.

Messrs. Vilmorin-Andrieux and Co., Paris.—Greenhouse and stove plants.

Miss E. Willmott, Warley.—Plants and cuttings of 22 species of Cape Pelargoniums.

RAINFALL RECORDED AT THE ROYAL BOTANIC GARDENS, KEW, DURING 1924.

	Inches.		Inches.
January	2·40	July	3·24
February	·49	August	2·46
March	·83	September	2·74
April	3·17	October	3·69
May	3·03	November	2·40
June	2·57	December	2·80

Total 29·82 inches.

THE MUSEUMS.

During the past year the Staff has been actively engaged in dealing with numerous enquiries from a wide circle of correspondents both at home and abroad, upon subjects connected with economic botany. Chiefly, however, the work has been the determination of various products, the supplying of information as to their properties and uses, and giving references to literature. Very often the material submitted for identification has been of the most meagre description and difficult to determine without careful comparison with the Museum collections and microscopic examination by the Assistant Keeper of the Jodrell Laboratory. Students and visitors to the Museums seeking special information have been assisted, and the Collections generally have been much used for instruction by teachers with parties of school-children. Duplicate material has been distributed to many institutions, among which are the following :—Royal Agricultural College, Cirencester ; Yale University School of Forestry, New Haven, Conn. ; University of Birmingham ; Royal Naval Cordite Factory ; Imperial Forestry Institute, Oxford ; National Museum of Wales, Cardiff ; South Eastern Agricultural College, Wye ; Surveyors' Institution, Westminster ; and the Forest Products Research Board. Little could be done during the year in the way of improving the permanent collections, as each member of the Staff had to devote all available time to studying systematically the products exhibited in the various courts of the British Empire Exhibition at Wembley in order to obtain fresh material to add to the Collections. It is gratifying to record that in many instances the Commissioners readily agreed to put on permanent exhibition in the Museums at Kew the material required. Other desiderata have been promised after the final closing of the Exhibition in 1925. A detailed note upon these products will appear in the *Bulletin* when they have been sorted out and incorporated in the collections. Two special donations have been noted below under Presentations to Museums.

A special exhibit of Cinchona, Rubber, Tea, Coffee, and Cacao, consisting chiefly of specimens of historical interest selected from the Museum Collections, was arranged, together with a series of views of the Royal Botanical Gardens, in the British Government Building at the Exhibition. The services of Mr.

W. Dallimore, Assistant in the Museum, having been lent to the Timber and Other Forest Products Committee of the British Empire Exhibition as Honorary Organising Secretary, the work of the Museums was somewhat handicapped, but on the other hand Mr. Dallimore was enabled to secure much valuable material to add to the collections. During the year an exhibit of native dyes of Western Tropical Africa, together with dyed yarns, fabrics and leather work, was brought together in Museum IV.

Presentations to Museums.—The principal specimens that have been received since those last recorded in the *Bulletin* are the following :—

Captain C. P. J. Layard, Shoeburyness.—Box containing a collection of hand specimens of Ceylon woods.

Rev. H. Dallimore, Oyo, S. Nigeria.—Samples of Native Cotton fabrics.

Prof. A. Henry, College of Science, Dublin.—Wood of *Glyptostrobus heterophyllus* Endl. from Hong Kong, and a sample of Larch Manna from Switzerland.

Mr. I. H. Burkill, Director. Botanic Gardens, Singapore.—Samples of Malayan timbers, and 17 views of the Botanic Gardens.

Dr. Lehman, Lolodorf, Cameroons.—Bark of *Alstonia congensis* Engl.

Mr. R. Fyffe, Chief Forest Officer, Uganda.—Seeds of "Kinkeliba" (*Cassia occidentalis* L.).

Mr. A. F. Fischer, Director of Forestry, Manila.—Samples of Wood of "Bagac" or "Apitong" (*Dipterocarpus grandiflorus* Blanco), and of "Panau" (*Dipterocarpus vernicifluus* Blanco).

Lady Church, Kew Gardens.—Japanese inlaid box.

Mr. T. Honey, Director of Agriculture, Companhia de Moçambique.—Samples and sugar of Uba Sugar Cane, and samples of various tanning barks.

The Tunbridge Wells Manufacturing Co., Putney Hill.—Three modern examples of the Royal Tunbridge Wells Ware.

Prof. Arnold Wall, Christchurch, New Zealand.—Plant of *Raoulia mammillaris* Hook. f.

Mr. E. L. Bancks, Longfield, Kent.—Cones of the "Grizzly Giant" (*Sequoia gigantea* Torr.) from Mariposa Grove, California.

University of Amoy, China.—Fifty-four samples of wood from Northern Fukien.

Mr. F. A. Rodway, Nowra, N. S. Wales.—Samples of bark and Kino from *Eucalyptus nowraensis* Maiden, and an ornament formed of the cone of a species of *Banksia*.

Sir D. Prain, Putney Heath.—Carved Teak Wood (*Tectona grandis L.*)

Mrs. Ernest Hart, Kilburn.—A collection of Ramie fabrics manufactured in Yorkshire together with samples of Ramie fibre.

The Howard Smith Paper Mills, Ltd., New Bridge Street, London, E.C.—Various samples of Paper manufactured by the Company in Canada.

Commissioner of Lands and Forests, Sierra Leone.—A Sierra Leone canoe. This is being moored in the Pond opposite Museum No. I.

Two valuable additions to the Museum from the British Empire Exhibition need special mention. A fine model of a Shellac Factory from the Bihar and Orissa Court was presented by the Shellac Association for Research. This is placed in the entrance of Museum I. Secondly the collection of oil-seeds, oils, meal and oil-cake from the Hull Civic Collection at Wembley, was presented by the Chairman of the Hull and District Seed Crushers' Committee. The latter collection has formed a special Exhibit in Museum I for some months past, but will now be incorporated in the arranged collections.

The Jodrell Laboratory.

Mr. L. A. Boodle studied the structure and development of intumescence-like growths of tissue containing oily substances on the stems of young plants of a species of *Khaya*, and made experiments on the germination of spores of *Thyrsopteris elegans* in water and in other media, with a view to finding the most favourable conditions for the early growth of the prothalli. A comparison of some specimens of kiln-dried and air-dried timber was also begun.

Mr. R. N. Chrystal continued his research upon the *Chermesidae*. The work most recently carried out was concerned with the biology of the species parasitic on the Silver Fir, and especially the effects produced upon the tissues of the host-tree by their attacks, and the rapidity with which severe injury can be caused.

Dr. R. C. Fisher made determinations of moisture in Elms attacked by Elm-bark beetles, with the object of finding the degree of moisture conducive to attack.

Dr. C. A. Pratt carried out inoculation experiments on bolls of Cotton plants with organisms isolated from diseased seeds.

Plant material was also prepared and fixed for use in research work to be carried out elsewhere by Dr. Åkerberg, Dr. A. Andersson, Mr. C. A. Jorgensen, Miss Lind, Miss Phillips and Miss Duke.

Herbarium and Library.

Since the publication of the last report (*K.B.* 1924, p. 41) highly satisfactory progress has been made with the work in the Herbarium.

The outstanding feature of the year 1924 has been the sanction of additional temporary staff for dealing with the accumulation of valuable material in the Herbarium Store. This assistance has enabled the main function of the Herbarium as set out in the Report of the "Committee on Botanical Work"—ordered to be printed by the House of Commons in June, 1901—to be more adequately fulfilled than has been possible for many years. In

this report on page 82 "The dominant object of Herbarium administration at Kew" is described as being "to set the material received as soon as possible into a shape in which it is available for study. Every detail of arrangement is directed towards making it as conveniently accessible as possible." It has always been realised that the annual influx of material into the Herbarium fully suffices to occupy the time of the regular Staff. At the present time many of the war arrears still await attention, quite apart from the very large collections received from time to time, which, being too vast to be dealt with during ordinary routine, often had to be housed exactly as received in the Herbarium Store and were thus unavailable for purposes of study. An account of the work accomplished by the special staff will be found under the different geographical areas of the section of the report dealing with the work of the Staff and also under the heading Store House (p. 55).

Another noteworthy feature of 1924 is the installation of electric light in both wings of the Herbarium, which, though only completed in December, has enabled a considerable amount of extra work to be accomplished during the darkest month of the year.

Routine.—The report this year is dealt with under headings of Continents, the reason for this being an alteration in the method of allotting the work. Hitherto the routine work of the Herbarium has been apportioned to the Staff mainly on a systematic basis. It became, however, increasingly apparent that a geographical basis has many advantages. It is obvious that a geographical system cannot be absolute, since for cryptogams and certain families of flowering plants specialists must be employed. In an institution such as Kew, however, where a great number of collections from the colonies are dealt with annually, the advantages of forming the primary divisions on a geographical basis have been found to outweigh the disadvantages, and this method, which has been gradually introduced and tested during the past two years, has now been definitely adopted for the bulk of the routine work of naming, laying in and responsible charge. The chief advantages of the system are :—(1) The collections are kept relatively intact and determination is more rapid ; and (2) The interest of the Staff is increased and broadened on ecological and phytogeographical lines.

Certain groups are still under the charge of experts. Collections containing Rhododendrons, *Amentiferae*, *Coniferae*, *Orchidaceae*, Petaloid Monocotyledons, *Cyperaceae* and *Gramineae*, though worked out by specialists, are in this report included under the continent from which they were derived. General work on these groups has been carried out only in two cases. The heavy task of writing up and re-arranging the whole of the *Orchidaceae*, commenced two years ago, has been continued throughout the year ; whilst about half the Masters collection of *Coniferae* has been remounted and transferred to the general Herbarium.

Europe.—Although the Herbarium Staff is mainly concerned with the floras of the Colonies it is essential to keep the European plants as well arranged and as thoroughly representative as possible. Considerable progress has been made in augmenting the collections from the least known parts of Europe and the Orient, and important supplies of material have been received and named from Bulgaria, Macedonia, Albania, and from Spain. A fine Spanish collection of about 850 species and varieties was received from the Rev. E. Ellman, who kindly took one of the temporary technical assistants with him on a collecting tour in central and southern Spain. As a result of the working out of these collections and of other material mounted during the year, approximately 8,000 sheets belonging to this geographical division have been laid in.

In the Store the European portion of the herbarium of the late Mr. C. B. Clarke has been arranged, some 1,800 sheets having been retained for Kew and 4,840 made available for exchange. The Prior collection of plants from the Orient, made some 70 years ago and bequeathed to Kew in 1906, which contains many plants quoted in Boissier's classical "Flora Orientalis," has been remounted and partly laid in. At the present time efforts are being concentrated on the large and very valuable Churchill collection, barely one-third of which up to the present has been incorporated. The temporary botanist engaged with the European plants in the Store has been employed in sorting, writing up, and laying in parts of the Prior, Clarke and Churchill collections.

It may be added that friendly correspondence has been established or fully resumed between Kew and botanists in all parts of Europe, including several new correspondents in the near East. Phytogeographical studies on the plants of South-Eastern Europe have also been stimulated by the visit to Kew for about 9 months of Professor N. Stojanoff of Sofia University, and of his assistant, Mr. B. Stefanoff, for a shorter period.

Asia.—The flora of China has received the greatest amount of attention, and the principal achievement was the removal from the Store of that part of the Forrest collection which had not already been incorporated in the Herbarium. The remainder of this collection, amounting to some 10,000 sheets, has now been mounted, named or written up "ex numero" from the Forrest Catalogue, and laid in. With the aid of a grant from the Bentham Trustees a copy of the typed Catalogue of the specimens has been prepared, and this has now been bound for use in the library. Another large collection dealt with was that of Cavalerie, which was sorted out in 1923 and has now been approximately named and laid in. Of other Chinese collections those of Giraldi (Shensi), Maire (Yunnan), Schneider (Yunnan), and Cowdry (Chihli) have been mounted and laid in. With the exception of the Licent collections from Central China all the Chinese material in the Store has now been incorporated in the Herbarium. During the year,

however, four additional large collections from China were received (see p. 60).

Two hundred and fifty syntype specimens of Chinese Rhododendrons described by the late Professor Sir Isaac Bayley Balfour and presented by Professor W. Wright Smith in 1923 were mounted and laid in and constitute a valuable addition. The specimens were specially selected to fill gaps in the Kew Herbarium and the genus Rhododendron has now been completely re-arranged.

As a result of the quantity of seed sent home by Wilson, Forrest, Farrer, Kingdon Ward and others, Chinese plants are now grown very extensively in gardens. The incorporation, therefore, of this mass of dried material, including so many type or co-type specimens, will be of immense value to horticultural science. It should be understood that, with such rapid handling, naming can only be approximate and that for accurate and final determination many years of study will be required, but the important fact is that the collections are now available for workers.

A series of monographs of important horticultural genera are in contemplation on the lines of the admirable work already accomplished at Edinburgh and the Arnold Arboretum. As a preliminary measure keys to the genera *Cotoneaster* and *Buddleia* are being drawn up, and these will be tested on the living collections in the Gardens before publication.

With regard to other parts of Asia, the Assistant for India has concentrated attention on the herbarium of the late Mr. J. F. Duthie. This collection, which contains approximately 15,000 sheets, has been arranged and, after allowing for ample representation at Kew, a fine series of duplicates for exchange has been extracted. A considerable portion of the Kew set has been mounted and laid in.

The collection of flowering plants made by Major Hingston during the Everest Expedition of 1924 has also been dealt with. The specimens, some 500 in number, are of interest from many points of view and include some species new to science.

Africa.—The routine in the African section of the Herbarium work is always heavy, owing to the particular interest of Kew in African botany and to the large number of collections received, both from Botanical Departments and from individual collectors. During 1924 some 3,500 plants so received were named and lists of determinations despatched to the senders. Among these collections were some 430 *Compositae* and Grasses from the National Herbarium at Pretoria, *Cyperaceae* from the Albany Museum, Grahamstown (an important collection containing many new species which have been described, *K.B.* 1925, No. 2), and mixed collections from the Kimberley Museum and from the Herbarium of the University of the Witwatersrand at Johannesburg. A number of rare and interesting orchids were received from Pretoria and Uganda accompanied by drawings and dissections. When it is remembered that such material is usually

critical and is only sent to Kew when the resources of the local Institutions are found insufficient, it will be realised that much time is involved in determination.

Lists of identifications of material received during the year have also been forwarded to West Africa, Uganda, Kenya, Portuguese East Africa, Rhodesia, and Mauritius, whilst others have been despatched to Washington in connection with the collection of Dr. H. L. Shantz for his work on "The Vegetation and Soils of Africa," and to various other Institutions in connection with collections which have been in hand for some years. In the case of South Africa assistance has been received from Dr. Burtt Davy in the course of his work on the Flora of the Transvaal, and he has also re-arranged several genera.

During the autumn weekly visits were paid to the British Empire Exhibition for the purpose of inspecting the material of *Proteaceae, Ericaceae,* etc., sent over in cold storage for exhibition in the South African Pavilion, and a large number of interesting specimens were presented to Kew, several of which were previously unrepresented in the Herbarium (*K.B.* 1925, p. 24).

In the Store the large collection of over 10,000 sheets made by the late A. Stolz in Tanganyika and acquired by Kew in 1915 has been sorted. The plants are being named by one of the temporary botanists. Several good sets of duplicates have been taken out for purposes of exchange and the first instalment has been distributed. Two other collections laid out and mounted by the special staff were those made by the late R. A. Dummer in Uganda and by J. Gossweiler in Angola.

America.—The special staff granted this year has been of great assistance. Since July 1924, about 7,000 sheets of named American plants from the Store have been laid out, including various North American collections containing syntypes of recently described species and an important collection from Trinidad received from the New York Botanical Garden. Of these, 3,000 sheets have already been mounted, and are ready for incorporation in the Herbarium as soon as the necessary cabinet space is available. The North American material will be of great assistance in checking the determinations of the North American trees and shrubs grown in the Arboretum, and the specimens from Trinidad will be invaluable in connection with the projected preparation of a Flora of Trinidad and Tobago.

Good progress has also been made with the determination of the collections. Among those dealt with was an extensive one from British Honduras, which is being critically named in connection with an Enumeration of the known flora of that Colony, the first part of which has already been published. Small collections from Trinidad (Patos Island) and British Guiana have also been named, in preparation for work on a more extended scale. The botanist dealing with this section of the Store has been mainly employed in the identification of the numerous Mexican collections, which, in order to economise time, have been

sorted into a single series so that they could be named simultaneously. These collections were taken in hand before those from other parts of Tropical America, partly owing to the greater ease with which they could be identified, and partly because the flora has so much in common with that of British Honduras that the latter cannot be investigated independently.

Australasia and Polynesia.—The routine mainly consisted of the identification of several small but critical miscellaneous collections received from the Botanical Departments in Australia and New Zealand. A revision of the Australian genus *Alphitonia* has been prepared and, to assist especially the Botanic Gardens at Brisbane, it is proposed to take in hand immediately the revision of certain genera of the *Agrostideae*. Several further supplies of material received from Fiji have been named, and these include additions to the flora of this group of islands. A fine set of 500 orchids collected in New Guinea by Schlechter has been partly dealt with.

Australia is the only continent for which it has not been possible to provide assistance from the temporary staff recently appointed. Many thousands of Australian and New Zealand sheets, therefore, lie in the Store awaiting mounting and incorporation.

Cryptogams.—Owing to the pressure of work with the flowering plants, the cryptogams, with the exception of the fungi, have received but scant attention. In the case of the *Pteridophyta*, in addition to answering enquiries a few collections were named, and it was found possible to lay in a certain number of sheets, preference being given, as always, to new or rare species. The same may be said of the Mosses and *Hepaticae*. It has been found impossible to deal with a very large number of specimens belonging to these three groups (especially Mosses) which are lying in the Store although some were acquired many years ago.

With regard to cellular cryptogams, practically no work was carried out with the *Algae* or with the Lichens, though some assistance has been received through visitors.

The Imperial Mycological Conference brought a number of overseas visitors to the Herbarium.

Fewer fungi were received from abroad than usual, but the fungus season at home was an exceptionally good one and the opportunity was taken to obtain and work out unusual species. Arrears of routine work were satisfactorily dealt with in that large collections named during recent years, particularly from Singapore, Uganda, Kenya and Mexico, were laid in, and Exsiccatae recently received from Dr. F. Petrak and Dr. H. Sydow were similarly disposed of. New or critical species collected by members of the Staff and by other mycologists have also been added to the British collection, which is kept separate from the general collection. By the kindness of Prof. Stojanoff the first instalment of a series of Bulgarian fungi was received from Dr. Barzakoff, of Sofia. This

collection is particularly welcome since the fungi of South-East Europe are very poorly represented in the Herbarium. During the year also a large accumulation of duplicates was sorted out, labelled and distributed to other Institutions.

Store House.—The special Staff, consisting of three botanists and eight preparers, appointed to deal with the large accumulations in the Store, commenced work during the latter half of the year. The Store has been fitted with electric light and gas stoves, and the bulk of the laying out, mounting, labelling and poisoning has been carried out in the building.

The collections in the Store had already been arranged and had been assigned to the various rooms according to continents. The special staff was accordingly distributed on a geographical basis and attached to the senior permanent Assistants in charge of the respective areas.

The work of laying out, mounting and naming has proceeded satisfactorily. In the case of certain old collections the material had first to be detached from the old sheets, a process which with old, brittle specimens necessitated the greatest care and a considerable expenditure of time.

Until further space can be found in the Herbarium by re-arrangement of the cabinets, it is not possible to lay in all the material mounted ; a selection, therefore, has had to be made and the less pressing collections have been arranged in families and retained in the Store.

The table given below indicates in summary form the amount of work accomplished in the 4 or 5 months during which the Staff has been at work. The value of the work to the establishment will, however, be more clearly evident from the preceding pages.

Laid out	25,570
Mounted	12,800
Named	4,400
Laid in	11,620
Made available for exchange	6,000

Summary of Routine.—The accompanying table summarizes the routine accomplished by the regular staff and by the special temporary staff, the lower cryptogams being excluded. The difference between the figures in the present table and those in the preceding indicates the work performed by the regular staff.

Laid out for mounting (approx.) ..	70,000	sheets.
Mounted	70,276	,,
Incorporated in the Herbarium ..	38,904	,,
Duplicates distributed	9,640	,,
Specimens received on loan ..	7,029	,,
Specimens sent out on loan ..	4,528	,,

INDEX KEWENSIS.—Owing to temporary suspension of compilation and to other causes due to the war, the fifth Supplement dealing with the years 1911-1915, which should normally have been published in 1918, did not appear until 1921. Thanks to a

special grant from the British Association for the Advancement of Science, however, it has been possible to make up considerable leeway, and it is hoped that the sixth Supplement, 1916–1920, will appear before the end of 1925. Half of the MS. (amounting to 16,000 entries) has already been sent to the Clarendon Press. In addition to names of flowering plants published during the quinquennium, Supplement VI contains numerous names which were inadvertently omitted from the first Supplement, covering the period 1886–1895. Lists of these additions have been published in the *Kew Bulletin* (1923 and 1924).

The recent acquirement of a set of the Card Index of New Genera, Species and Varieties of American Plants (commencing from issue No. 100), issued by the Gray Herbarium of Harvard University, will be most useful, not only as a guide to names appearing in obscure publications not represented at Kew, but in affording a means of checking the accuracy of compilation and detecting omissions.

Experimental Ground.—A small plot adjoining the Herbarium was allotted for experimental work in connection with taxonomy. Seeds of new and rare species from S.E. Europe were raised and studied and suitable material acquired for the Herbarium. Experiments with certain fungi were also carried out. The plot, however, will chiefly be used for the study of characters which can only be properly dealt with in the living state and for testing such questions as segregation, hybrid origin and stability of characters.

Seed Collection.—Several valuable collections of seeds, which have been accumulating at Kew for many years, have now been incorporated as a whole and arranged in three special cabinets placed in the small room off the Visitors' Room in the Herbarium. This seed collection consists of about 6,000 samples representing some 4,200 species, which are kept in separate glass-topped metal boxes. The boxes are arranged in families in the sequence of the Genera Plantarum. The genera of each family and the species of each genus are arranged in alphabetical order. The samples are limited to small fruits and seeds, larger specimens being deposited in the carpological collection.

Since the account of the incorporation of this collection was published in the *Kew Bulletin* (1924, p. 136) valuable additions have been obtained of European, Western Australian and Chinese fruits and seeds. Its usefulness has been amply proved not only for routine naming, but for research work both in connection with living plants and fossil records. Exchange of fruits and seeds with other institutions will be welcomed.

Publications and Research.—The pressure of work already referred to has left little time for research. The general publications of the staff included the continuation of a series of articles entitled "Contributions towards a Phylogenetic Classification of Flowering Plants" (*Kew Bull.* 1924, Nos. 2 & 4); several papers on

nomenclature (Journ. Bot.); descriptions of new orchids; an account of the life history of *Rhizoctonia Crocorum* (Ann. Appl. Biol.); a revision of the genus *Cyananthus* (*Kew Bull.* 1924, p. 241) and descriptions of miscellaneous new species. Two papers on the Flora of S.E. Europe were published, one on the Flora of Varna district (Journ. Bot.) and another on the Flora of the Gallipoli Peninsula (*Kew Bull.* 1924, Nos. 7–10). Several contributions appeared dealing with American botany, the two principal being Part 1 of an Enumeration of the Flora of British Honduras (*Kew Bull.* 1924, p. 1) and a detailed and fully indexed Itinerary of Humboldt and Bonpland's travels.

Good progress has been made on the Flora of West Africa, and sufficient manuscript is now ready for the first part, including about 50 illustrations. This work has been much facilitated through the kind co-operation of the authorities in Paris, Berlin and Brussels, who have generously lent a large number of type specimens.

Much of the research which is carried out in the Herbarium is performed by visitors, and an account of their activities in 1924 will be found on p. 62.

Miscellaneous.—In connection with the British Empire Exhibition an exhibit of the principal Floras and Kew Publications was prepared and arranged in two cases.

An important event of the year was the Imperial Botanical Conference held in July. Sessions were devoted to the following subjects, which, being of considerable importance to Kew, were attended by practically the whole of the permanent staff: "The best means of promoting a complete Botanical Survey of the different parts of the Empire," "Correlation of Taxonomic work in the Dominions and Colonies with work at home," and "Vegetation Survey in different parts of the Empire and Training in Field Ecology." A session was also devoted to Nomenclature. The duty of expounding the proposals of this highly intricate, unattractive, yet essential branch of taxonomic botany fell to Mr. T. A. Sprague as convener of the Sub-committee, and it is gratifying to record that the whole of the recommendations proposed (which had involved many weeks of work and had the general support of the Herbarium Staff) were approved by the meeting.

Additions to Herbarium.—The total number of specimens acquired during 1924 was 29,274. Of these 5,182 were purchased. The chief sources from which these collections were obtained are as follows:—

Europe.—*Presented:* Britain, by Mr. Edgar Thurston, Mr. C. E. Salmon, and the Botanical Exchange Club per Mr. C. V. B. Marquand; Lettland, by Prof. N. Malta; Hungary (Roses, coll. Dr. A. von Degen), by Lt.-Col. A. H. Wolley-Dod; Flora Hungarica Exsiccata, cent. 6, and Albanian plants, by Dr. Ferd. Filarsky; Flora Roumaniae Exsiccata, cent. 3, by Prof. A. Borza; Macedonia, by Prof. N. Košanin; Bulgaria, Varna District, by Mr. B. Gilliat-Smith; Bulgarian Basidio-

mycetes, by Dr. B. Barzakoff; Gallipoli, by Lt.-Col. F. R. Durham, Capt. C. M. Ingoldby and Mr. R. Kett; Balkan Peninsula, by Mr. W. B. Turrill; Central and Southern Spain, Rev. E. Ellman.

Purchased: Mr. D. McArdle, Irish Hepaticae; H. Sydow, Mycotheca Germanica, fasc. 42-45; Dr. A. Hayek, Centaureae Exsiccatae Criticae, fasc. 4; Dr. W. Siemaszko, Fungi Bialowiezenses Exsiccati, cent. 1; J. Dörfler, Albania; A. Fiori and A. Béguinot, Flora Italica Exsiccata, cent. 27–28, and Xylotomotheca, dec. 18–19; G. Pollacci and A. Nannizzi, I. Miceti Patogeni, fasc. 2–3.

Atlantic Islands.—*Presented:* Madeira (coll. L. A. M. Riley), by the Scientific Expeditionary Research Association.

China.—*Presented:* Primulaceae, by the Royal Botanic Garden, Edinburgh; Primulaceae and Rhododendrons (coll. J. F. Rock), by the U.S. National Museum; (coll. C. Schneider), by the Botanic Gardens, Dahlem; Fukien, by Mr. H. H. Chung; Northern China, by Prof. A. N. Steward; 1914–1918 expedition, by Dr. H. Handel-Mazzetti.

Purchased: Prof. H. H. Hu, Chekiang and Kiangsi; Canton Christian College (per Prof. G. W. Groff), Hainan (coll. F. A. McClure).

India.—*Presented:* Madras plants from the Royal Botanic Garden, Calcutta, and the Madras Government Herbarium, per Mr. J. S. Gamble; Kashmir, by Prof. R. R. Stewart; Mount Everest Expedition 1924 (coll. Major R. W. G. Hingston), by the Royal Geographical Society.

Malay Peninsula.—*Presented:* from various localities and collectors, by the Director, Botanic Gardens, Singapore.

Indo-China.—*Presented:* Siam, by Dr. A. F. G. Kerr, Mrs. D. J. Collins, and (coll. Luang Winit) by the Conservator of Forests; Lower Siam, by the Director, Botanic Gardens, Singapore.

Malay Islands.—*Presented:* Sarawak, by Dr. F. W. Foxworthy; Java, by the Botanic Garden, Buitenzorg; Sumatra, by Mr. C. J. Brooks; New Guinea, by the Botanical Museum, Utrecht.

Purchased: Dr. R. Schlechter, New Guinea Orchids.

Philippine Islands.—*Presented:* by the Bureau of Science, Manila.

Australia.—*Presented:* by Mr. J. H. Maiden; Tasmanian Hepaticae, by Mr. W. A. Weymouth.

Purchased: Mr. Max Koch, Western Australia.

New Zealand.—*Presented:* Veronicas, by Sir G. T. Fenwick; Ferns, by Miss G. M. Crowley.

Polynesia.—*Presented :* Fiji, by Mr. W. Greenwood.

Tropical Africa.—*Presented :* French Sudan, by Dr. A. Chevalier ; Kenya Colony, by the Department of Agriculture, Nairobi ; Belgian Congo, by the Jardin Botanique de l'État, Brussels ; Katanga (coll. C. W. v. Hirschberg), by the Division of Botany, Pretoria ; Mount Elgon, by Mr. J. D. Snowden ; Zambesi region (coll. G. Menyharth), by the Director, Arnold Arboretum ; Portuguese East Africa, by Mr. T. Honey ; various localities, by the Botanic Gardens, Dahlem.

South Africa.—*Presented :* Transvaal orchids, by Mr. G. Thorncroft ; Griqualand West, by Miss M. Wilman ; Cape Town district, from the South African Pavilion, British Empire Exhibition, Wembley (per Mr. A. E. Wayt) ; Wilms and Rehmann's collections, by Dr. H. Schinz ; various localities, by the Division of Botany, Pretoria, Dr. J. Burtt Davy and the Rev. F. A. Rogers.

North America.—*Presented :* from various localities, by the Arnold Arboretum and the Gray Herbarium, Harvard.

Purchased : Mr. B. F. Bush, Missouri.

Central America.—*Presented :* Mexico, Sinaloa (coll. J. Gonzalez Ortega), by the Muséum National d'Histoire Naturelle, Paris.

West Indies.—*Presented :* Trinidad, by Mr. R. O. Williams.

Tropical South America.—*Presented :* British Guiana (coll. Dr. H. A. Gleason), by the New York Botanical Garden ; various localities, by Dr. J. N. Rose.

Purchased : Father Luis Mille, Ecuador (coll. Sodiro and Mille) ; Mr. Cyril Allen, Colombia, Lake Sapotoza region and Magdalena Department.

Temperate South America.—*Purchased :* Dr. E. Werdermann, Chile, Atacama.

General.—*Purchased :* Naturhistorisches Museum, Vienna, Kryptogamae Exsiccatae, cent. 28 ; F. L. Stevens, Fungi ; Miss J. Stephani, tracings of F. Stephani's drawings of Hepaticae.

Notes on the Collections.—Mr. Edgar Thurston, C.I.E., has continued his investigations on the flora of Cornwall and has added new or rare specimens to his herbarium already at Kew. Other rare British plants have been received from the Botanical Exchange Club through Mr. C. V. B. Marquand, and also from Mr. C. E. Salmon. Numerous plants from the Balkan Peninsula have been received from the various collectors mentioned in the above detailed list, some of which are enumerated in Mr. W. B. Turrill's

paper "On the Flora of the Gallipoli Peninsula" (*Kew Bull.* 1924). An interesting collection of Hungarian roses made by Dr. A. von Degen has been presented by Lt.-Col. A. H. Wolley-Dod, R.A. Fascicles 2 and 3 of G. Pollacci and A. Nannizzi's I. Miceti Patogeni have been purchased and consist of slides of various disease-producing organisms accompanied by descriptive letter-press and illustrations. A. Fiori and A. Béguinot's Flora Italica Exsiccata has now reached its twenty-eighth century and is accompanied by the nineteenth decade of their specimens of Italian woods.

The Scientific Expeditionary Research Association has presented the plants collected in Madeira by Mr. L. A. M. Riley, during the cruise of the "St. George," and named by him.

The Chinese collections have been considerably increased during the year. Well-prepared specimens of *Primulaceae* and Rhododendrons have been presented by the United States National Museum, and over 400 *Primulaceae* from various collectors by the Royal Botanic Garden, Edinburgh. Mr. C. Schneider's Chinese collection has been presented by the Botanic Gardens, Dahlem. Mr. H. H. Chung's Fukien collection amounts to nearly 1,300 numbers. From Dr. H. Handel-Mazzetti have been received specimens collected by him in China between 1914 and 1918. Mr. F. A. McClure's Hainan collection purchased from the Christian College, Canton, had been determined by Dean E. D. Merrill.

Mr. J. S. Gamble, F.R.S., has been permitted to select specimens for retention at Kew from the material lent by the Royal Botanic Garden, Calcutta, and the Madras Government Herbarium, Coimbatore, for the preparation of his "Flora of the Madras Presidency." Prof. R. R. Stewart, of the Gordon College, Rawalpindi, has presented plants from his Kashmir collection, determined chiefly by him while on leave at Kew and in the United States. The specimens, numbering over 400, collected by Major R. W. G. Hingston during the 1924 Mount Everest Expedition have been presented by the Royal Geographical Society.

Various collections from the Malay Peninsula have been sent by the Director of the Botanic Gardens, Singapore, to assist Mr. H. N. Ridley in preparing his "Flora of the Malay Peninsula," now approaching completion.

New Guinea plants have been presented by the Botanical Museum, Utrecht, and 500 orchids from the same region have been purchased from Dr. R. Schlechter. Dr. F. W. Foxworthy, who has been working at Kew during the year, has given specimens from his Sarawak collection. Over 1,000 miscellaneous duplicates have been given in exchange by the Buitenzorg Botanic Garden, and an interesting collection from Sumatra by Mr. C. J. Brooks. A valuable collection, containing many *Pandani*, has been presented by the Bureau of Science, Manila.

Various Australian plants have been received from the Director of the Botanic Gardens, Sydney, and Tasmanian Hepaticae from

Mr. W. A. Weymouth, while additional Western Australian specimens have been purchased from Mr. Max Koch.

A fine collection of New Zealand Veronicas has been presented by Sir Geo. Fenwick.

Mr. W. Greenwood has continued his investigation on the flora of Fiji, and sent several consignments of specimens to Kew.

Dr. A. Chevalier has sent a collection from the French Soudan. Various specimens from the Belgian Congo have been presented by the Jardin Botanique de l'État, Brussels, and C. W. v. Hirschberg's orchids from Katanga by the Division of Botany, Pretoria. Mr. J. D. Snowden has sent plants collected by him at Mount Elgon, and others from Kenya Colony have come from the Department of Agriculture, Nairobi. Mr. T. Honey has brought plants collected by him in Portuguese East Africa. G. Menyharth's Zambesi specimens have been received from the Director of the Arnold Arboretum, and from the Bolus Herbarium specimens collected in Rhodesia by Mr. F. Eyles. In addition to the above, various small consignments for determination have been sent from Nigeria and the Gold Coast, as well as miscellaneous African specimens from the Botanic Gardens, Dahlem, from which also have been received determinations of Mildbraed's Cameroon plants.

Various South African plants have been presented by the Division of Botany, Pretoria, Dr. H. Schinz, the Rev. F. A. Rogers and Dr. J. Burtt Davy, the last named being still occupied at Kew in working out a Flora of the Transvaal. Miss M. Wilman, who visited Kew in the summer, presented specimens collected by her in Griqualand West, and Mr. G. Thorncroft, who has long been collecting in South Africa, sent Transvaal Orchids. Through the kindness of the Manager of the South African Exhibit at the British Empire Exhibition at Wembley, many specimens sent from the Cape Town District in cold storage have been presented, and form a valuable addition to the herbarium; many of them (especially the *Bruniaceae*, *Proteaceae* and *Ericaceae*) belong to species previously but poorly represented at Kew. Amongst these were some still in a condition to permit of their being grown in the Gardens.

Valuable contributions of North American plants have been received from the Arnold Arboretum and the Gray Herbarium, Harvard, the latter amounting to over 2,900 sheets.

The Muséum National d'Histoire Naturelle has, with the consent of the collector, Mr. J. Gonzalez Ortega, transferred to Kew a collection of plants from Sinaloa. These are being enumerated by Mr. L. A. M. Riley in his "Contributions to the Flora of Sinaloa," the first part of which was published in the *Kew Bulletin*, 1923, p. 115, and has been followed by four other parts, the last in the volume for 1924, p. 206.

The New York Botanical Garden has presented plants from British Guiana collected by Dr. H. A. Gleason, who spent some time at Kew this year in working them out, while others have been determined by Mr. N. E. Brown. Collections from the Lake Sapotoza region and the Magdalena Department have been acquired from Mr. Cyril Allen, who is living in Colombia. Dr. E. Werdermann's specimens from Atacama, Chile, have been purchased.

During the many years in which Mr. F. Stephani worked at *Hepaticae* he made a large and valuable collection of drawings of dissections. Tracings of a selection of these drawings, made by his daughter, Miss J. Stephani, have been purchased.

Visitors—About 5,690 visits have been made to the Herbarium during the year. Amongst those who have paid frequent visits or made a prolonged stay were :—Mr. A. H. G. Alston, Oxford (African Botany) ; Mr. E. G. Baker, British Museum (African and New Caledonian plants) ; Mdlle. M. Bensaude, Azores (Pathology) ; Prof. S. R. Bose, Calcutta (*Polyporeae*) ; Mr. N. E. Brown (South African plants) ; Prof. A. H. R. Buller, Winnipeg (*Fungi*) ; Miss M. E. J. Chandler (fossil fruits and seeds) ; Mr. R. N. Chrystal, Forest Products Board (Timber Research) ; Mr. and Mrs. J. M. Cowan (North-East Indian flora) ; Prof. W. G. Craib, Aberdeen (Flora of Siam) ; Mr. G. H. Cunningham, Wellington, New Zealand (*Fungi*) ; Mrs. Hanna Czeczott, Cracow (Canary Island plants) ; Mr. A. N. David, Forest Products Board (Timber Research), Dr. and Mrs. Burtt Davy (Transvaal Flora) ; Mr. H. N. Dixon (*Musci*) ; Miss M. M. Duke, Westfield College (*Fungi*) ; Dr. David Fairchild, Dept. of Agriculture, Washington (Economic botany, especially Pomology) ; Mr. H. J. Fourcade, Cape Town (South African plants) ; Dr. F. W. Foxworthy, Federated Malay States (*Dipterocarpaceae*) ; Mr. J. S. Gamble (Flora of Madras) ; Miss S. Garabedian, South African Museum (South African Plants) ; Mr. L. V. Lester Garland (Australian plants, etc.) ; Dr. H. A. Gleason, New York Botanical Gardens (British Guiana plants) ; Mr. W. B. Grove, Birmingham (*Fungi*) ; Mr. H. H. Haines (Flora of Bihar and Orissa) ; Mr. L. Hall (Plant Chemistry) ; Dr. A. Henry, Dublin (*Coniferae*) ; Mrs. C. M. Ingoldby (Thracian plants) ; Mr. A. Bruce Jackson, Imperial Institute (Trees and shrubs) ; Prof. S. Kawagoe, Kagoshima (Economic Botany) ; Mr. C. C. Lacaita (European and Oriental plants) ; Prof. J. M. Macfarlane, Philadelphia (*Nepenthaceae*) ; Prof. and Mrs. C. E. Moss, Johannesburg (Transvaal plants) ; Mr. R. Paulson (Lichens) ; Dr. C. V. Piper, Dept. of Agriculture, Washington (*Leguminosae*) ; Dr. R. Lloyd Praeger, Dublin (*Sempervivum*) ; Mrs. E. M. Reid (Fossil fruits and seeds) ; Mr. H. N. Ridley (Flora of the Malay Peninsula) ; Mr. L. A. M. Riley (Flora of British Honduras ; Scientific Expeditionary Research Association, Pacific Expedition) ; Dr. W. Robyns, Brussels (*Rubiaceae*) ; Prof. T. Sasaki,

Tokio (*Oryza*); Dr. S. Schonland, Albany Museum, Grahamstown (*Cyperaceae*); Dr. E. E. Sherff, Chicago (*Bidens*); Miss L. Snelling (Botanical Magazine); Dr. O. Stapf (Botanical Magazine: Pritzel's Index Iconum); Mr. B. Stefanoff, Sofia (Flora of Bulgaria); Prof. R. R. Stewart, Rawalpindi (Flora of Kashmir); Prof. N. Stojanoff, Sofia (Flora of Bulgaria); Prof. D. Thoday, Bangor (South African plants); Mr. E. Thurston (Cornish plants).

Several visitors carried out their studies in the Herbarium throughout the entire year. Dr. O. Stapf, the editor, together with the special assistants engaged on the Botanical Magazine, made considerable use of the Herbarium and Library. He also, with the staff employed by the Royal Horticultural Society, continued work on the compilation of the new edition of Pritzel's Index Iconum. Dr. and Mrs. Burtt Davy were engaged throughout the year on the preparation of a Flora of the Transvaal, and Mr. H. N. Ridley on the Flora of the Malay Peninsula; the latter has also kindly assisted with the laying in of some of the Malayan collections. Mr. L. A. M. Riley was absent part of the year with the "St. George" Pacific Expedition of the Scientific Expeditionary Research Association, but on his return continued his studies on the Flora of Mexico and British Honduras and on the material collected by him whilst with the Expedition. Mr. N. E. Brown was also a constant visitor.

Special mention should also be made of Prof. W. G. Craib, who during the summer vacation prosecuted his studies on the Flora of Siam (see also *Kew Bull.* 1924, p. 81); Mr. J. S. Gamble, who continued his work on the Flora of Madras; Miss S. Garabedian, who continued studies on the flora of South West Africa and published a revision of the genus *Emilia* (*Kew Bull.* 1924, p. 137); Dr. H. A. Gleason, who was engaged on the flora of British Guiana; Dr. W. Robyns, who published a paper on *Sphaeranthus* (*Kew Bull.* 1924, p. 177); and Prof. Stojanoff. In the realm of Paleobotany Mrs. Clement Reid and Miss M. E. J. Chandler spent several weeks comparing seeds obtained from the Isle of Wight oligocene beds with seeds of existing plants as represented in the seed collection and on the Herbarium sheets. On the cryptogamic side Miss M. M. Duke commenced a year's research on systematic mycology, taking up in the first place an investigation of the genus *Vermicularia*, whilst Mr. R. Paulson paid regular weekly visits in connection with his work on lichens.

Several other papers on taxonomic botany based on work carried out by visitors at Kew and not alluded to above were published during the year.

Presentations to the Library during 1924.

The total number of publications received as presentations during the year has been greater than usual, and in this note it is possible to mention only the more important.

The establishment is indebted to the Bentham Trustees for several valuable accessions, including:—L. Cusin & E. Ansberque,

Herbier de la Flore française, 1867–76, 25 parts forming 15 volumes ; J. Lindley, *Pomologia Britannica*, 1841, 3 volumes ; A. Poiteau & P. Turpin, *Flore parisienne*, 1813 ; I. D. Reitter & G. F. Abel, *Abbildung der hundert deutschen wilden Holz-arten*, 1790 ; and K. Sprengel, *Antiquitatum botanicarum specimen primum*, 1798. Cusin and Ansberque's work is a folio containing 4,759 plates of the native flowering plants of France produced by a kind of nature-printing, termed on the title-pages, " Procédé de reproduction dit phytoxygraphique." Except one detached flower in each case, which is depicted in its natural colours, all the illustrations are black. A typed copy of Mr. George Forrest's admirable field notes relating to the plants collected by him in Western China and neighbouring regions in the years 1910 to 1919, with determinations as far as the specimens have been identified, has kindly been lent to Kew by the Regius Keeper of the Royal Botanic Garden, Edinburgh, in order that a typed copy, for preservation in the library, might be prepared. The notes relate to specimens numbered 5,499 to 19,333, a set of which is in the Kew Herbarium, and the typed copy of them, forming 6 rather thick foolscap folio volumes, has been made at the expense of the Bentham Trustees.

A collection of 74 volumes, among them being several works of considerable value, has been presented by Miss L. C. Western and Mr. Oswald Western. They formed part of the library of their father, the late Mr. Edward Young Western, of 27, Pembridge Square, Bayswater, who had devoted much of his spare time during many years of his life to accumulating material for a dictionary of the popular names of plants. This material he has left in the form of an enormous number of notes, neatly written and carefully arranged. Several of the books included in the gift were already represented in the Kew Library, but two or more copies of some of them are required. Among those presented are a complete set of the *Index Kewensis* ; H. Baillon, *The Natural History of Plants*, translated by M. M. Hartog, 1871–88, 8 volumes ; E. Le Maout & J. Decaisne, *A General System of Botany*, 1876 ; H. L. Gerth van Wijk, *A Dictionary of Plant Names*, vol. 1, 1911 ; G. E. Massee, *British Fungus Flora*, 1892–95, 4 volumes ; and H. Coste, *Flore descriptive et illustrée de la France*, 1901–06, 3 volumes.

The following have been received from the Carnegie Institution of Washington :—N. L. Britton & J. N. Rose, *The Cactaceae*, vol. iv., completing this fine work ; W. A. Cannon. *General and physiological features of the vegetation of the more arid portions of Southern Africa ;* F. C. Jean & J. E. Weaver, *Root behaviour and crop yield under irrigation ;* D. T. MacDougal & Forrest Shreve, *Growth in trees and massive organs of plants ;* and W. A. Setchell, *American Samoa.*

A presentation by Lady Church included a copy of Kerner & Oliver's *The Natural History of Plants*, 1894–95, in 16 parts ; M. Heiden, *Motive : Sammlung von Einzelformen aller Techniken des Kunstgewerbes als Vorbilder und Studienmaterial*, 1890–92, a large folio complete in 60 parts, containing 300 plates ; J. F. Duthie,

Illustrations of the indigenous Fodder Grasses of the plains of North-Western India, 1886 ; 10 original drawings by the late Prof. D. Oliver in a cover lettered, " Plant forms as used in decoration by workmen in the Middle Ages, decade 5, Chartres," and dated March, 1886 ; a portfolio containing 36 original paintings of plants by Margaret Meen ; various parts of journals and other publications. On the inside of the portfolio containing Margaret Meen's paintings the date of them is given as 1785. Very little is known of the artist or her work, which shows considerable talent. Some published drawings by her, issued under the title, " Exotic Plants from the Royal Gardens, Kew," dated 1790, are in the Kew Library, and were the subject of a note in *K.B.* 1893, p. 147.

A set of 152 of the *Handbooks* prepared under the direction of the Historical Section of the Foreign Office has been received from the Controller of H.M. Stationery Office.

The Secretary of State for the Colonies has presented a *Guide to British Honduras*, compiled by Sologaistoa Brothers, and the *Second Annual Bulletin of the Agricultural Department, Nigeria.* A copy of *Geography of British Honduras*, by A. Barrow Dillon, and a complete set (7 numbers) of the *Bulletins of the Geological Survey of Nigeria* have been received through the Crown Agents for the Colonies.

The Secretary of State for India has sent part 5 of H. H. Haines's *Botany of Bihar and Orissa*, and 2 copies of part 6 of J. S. Gamble's *Flora of the Presidency of Madras.* A copy of the last named has also been received from the author. A. W. Lushington's *Vernacular list of trees, shrubs and woody climbers in the Madras Presidency*, 1915, 2 volumes (in 3), has been received from the High Commissioner for India.

A thin folio volume containing some interesting correspondence and other documents in manuscript, dated 1790 and 1791, relating to St. Helena and the Botanic Garden, St. Vincent, which were found some years ago in the Royal Archives at Windsor, has been presented to Kew by H.M. the King. It includes transcripts of 6 letters from James Anderson, a physician-general of the East India Company, stationed at the time at Fort St. George, Madras, addressed to the Governor of St. Helena ; these refer to the introduction of the cochineal insect and various economic plants into the island. Two letters, apparently original, are from Alexander Anderson, Superintendent of the Botanic Garden, St. Vincent, both dated July 1, 1791, and addressed to Sir George Yonge, Bart., Secretary for War. One of them is accompanied by a report on his visit to Dutch Guiana. There is also a report on the Botanic Garden, St. Vincent, dated June 24, 1791, and a list of plants in the garden, with their uses.

Lieut.-Col. Sir David Prain has presented the year's issues of the *Berichte der Deutschen Botanischen Gesellschaft*, the *Bulletin de la Société botanique de France*, the *Proceedings of the American Philosophical Society*, parts of various other publications, and the second volume of *The Forests of India*, by E. P. Stebbing.

The six parts of J. H. Maiden's *Critical Revision of the Genus Eucalyptus*, issued in 1923 and 1924, were received from Dr. W. Botting Hemsley, continuing the set sent to Kew by him, and since his death a parcel of his books and pamphlets, including a copy of the *Trail Memorial Volume*, has been received from his daughter, Mrs. E. H. Lovelock.

The following societies, academies and other institutions have again as in other years made liberal contributions to the library, and their publications now form sets of considerable extent and value :—Royal Swedish Academy of Sciences, Stockholm ; Royal University of Upsala ; Danish Botanical Society ; Botanic Garden, Copenhagen ; Botanic Garden, Petrograd ; Institute of Botany, University of Geneva ; Botanical Museum, University of Zurich ; Agricultural Research Institute, Pusa ; Indian Tea Association, Calcutta ; Department of Agriculture, Ceylon ; Department of Agriculture, Buitenzorg ; Bureaus of Science, Agriculture and Forestry, Philippine Islands ; New Zealand Institute ; Department of Agriculture, Union of South Africa ; Smithsonian Institution, Washington ; United States Department of Agriculture ; Arnold Arboretum ; Gray Herbarium of Harvard University ; New York Botanical Garden ; Missouri Botanical Garden ; Field Museum, Chicago ; California Academy of Sciences and the University of California. The numerous publications received from the Royal University of Upsala include : G. W. F. Carlson, *Süsswasseralgen aus der Antarktis, Süd Georgien und den Falkland Inseln*, 1913 ; G. E. Du Rietz, *Zur methodologischen Grundlage der modernen Pflanzensoziologie*, 1921 ; Th. C. E. Fries, *Botanische Untersuchungen im nördlichen Schweden*, 1913 ; J. E. Ljungqvist, *Mästermyr ; en växtekologisk Studie*, I, 1914 ; E. Melin, *Studier över de Norrländska Myrmarkernas Vegetation*, 1917 ; H. Osvald, *Die Vegetation des Hochmoores Komosse*, 1923 ; G. Samuelsson, *Studien über die Entwicklungsgeschichte der Blüten einiger Bicornes-Typen*, 1913 ; H. Smith, *Vegetationen och dess Utvecklingshistoria i det Centralsvenska Högfjällsområdet*, 1920 ; R. Sterner, *The continental element in the Flora of South Sweden*, 1922 ; and T. Å. Tengwall, *Die Vegetation des Sarekgebietes*, I, 1920.

Several volumes have been presented by their publishers. By Messrs. Macmillan :—L. H. Bailey, *Manual of cultivated plants* (of which the author also presented a copy) and *The cultivated evergreens ;* F. T. Bennett, *Outlines of fungi and plant diseases ;* E. B. Copeland, *Rice*. By Messrs. Benn Brothers :—H. Hunter, *Oats : their varieties and characteristics ;* W. J. Malden, *Grassland farming, pastures and leys ;* Sir E. J. Russell, *Farm soil and its improvement*. By the Delegates of the Press, Oxford :—W. S. Jones, *Timbers : their structure and identification* (2 copies) ; *Oxford Forestry Memoirs*, No. 3. By Country Life Limited :—W. J. Bean, *Shrubs for amateurs ;* E. H. M. Cox, *Rhododendrons for amateurs ;* J. Jacob, *Hardy bulbs for amateurs*. By Messrs. Cassell :—F. Robson, *The flower-seeker* (3 copies). By Messrs.

Whitcombe and Tombs :—L. Cockayne, *The cultivation of New Zealand plants.*

From Prof. Lucien Hauman 12 publications have been received. These include the second part of a *Catalogue des Phanérogames de l'Argentine*, by himself and L. H. Irigoyen ; *Bibliografia botánica Argentina*, 1914–21, by himself and A. Castellanos ; also his papers :—*Orchidées Argentines*, series 2 ; *Les Aristolochiacées de l'Argentine et de l'Uruguay* ; and *Un viaje botánico al Lago Argentino* (*Patagonia*).

Prof. Cristóbal M. Hicken has presented 23 of his publications, nearly all of which deal with the botany of Argentina. Among them are :—*Chloris Platensis Argentina*, which forms volume 2 of *Apuntes de Historia Natural*, 1910 ; *Polypodiacearum Argentinarum catalogus*, 1908 ; *Evolución de las ciencias en la República Argentina* : *los estudios botánicos*, 1923 ; *Plantae Fischerianae*, 1916 ; *Un Paseo por el Jardin Botánico* [Buenos Aires], 1917 ; *Estudios botánicos*, 1919 ; and the first two numbers of a serial publication entitled, *Darwiniana* : *Carpeta del "Darwinion," Laboratorio particular del Doctor C. M. Hicken.*

The more important of the other presentations made to the library during the year are the following, which, unless otherwise stated, have been received from their authors :—*Acta Horti Gothoburgensis*, tom i. from Editor, Prof. Carl Skottsberg ; Oakes Ames, *Schedulae Orchidianae*, No. 7, and *An enumeration of the Orchids of the United States and Canada*, the latter from the American Orchid Society ; *Annals of the Bolus Herbarium*, vol. iii., pt. 4, from Editor, Mrs. L. Bolus ; *Annual Report, East Malling Research Station*, 1923, from Director ; T. A. Barns, *Across the Great Craterland to the Congo* ; J. W. Bews & R. D. Aitken, *Researches on the vegetation of Natal*, ser. 1 (Bot. Surv. S. Africa, mem. 5) ; J. M. Black, *Flora of South Australia*, pt. 2 ; F. C. E. Börgesen, *Contribution to the knowledge of the vegetation of the Canary Islands* ; V. F. Brotherus, *Die Laubmoose Fennoskandias*, from the Societas pro Fauna et Flora Fennica ; *Bulletin de la Société dendrologique de France*, nos. 1–49 (complete set), from Mr. W. J. Bean ; *Bulletin de la Société Linnéenne de Lyon*, 1923–24, and *Annales*, 1924, from Dr. A. W. Hill ; P. Caspari, *Dr. M. Bachs Flora der Rheinprovinz*, 1899, and E. Postel, *Der Führer in die Pflanzenwelt*, 1881, from Miss Frieda Zeyen ; *Contributions from the Osborn Botanical Laboratory* (Yale University), 1922–23, 20 reprints, from the Laboratory ; J. Burtt Davy, a collection of 29 of his papers, bound in 1 volume ; H. Handel-Mazzetti, *Plantae novae Sinenses*, and other papers, from Dr. Otto Stapf ; C. Houard, *Les Zoocécidies des plantes d'Afrique, d'Asie et d'Océanie*, 2 vols. ; W. L. Jepson, *Manual of the flowering plants of California*, sign. 2–12 ; A. Juillet, *Le Pyrèthre insecticide de Dalmatie*, and 24 coloured plates of the medicinal plants of France, from the Office National des Matières premières végétales pour la Droguerie, &c., Paris ; H. Jumelle, *Les Dypsis* ; R. Kanehira, *Anatomical notes on Indian woods*, and *Identification of Philippine woods by*

anatomical characters; H. Knoche, *Die Kanarischen Inseln*; Mrs. Harriet H. McCormick, *Landscape Art*, from Mr. Cyrus M. McCormick; J. M. Macfarlane, *The evolution and distribution of Fishes; McGill University Publications*, Botany, nos. 19–27, from the University; J. H. Maiden, *Critical revision of the Genus Eucalyptus*, pt. 62, and *The Forest Flora of New South Wales*, pts. 75–77, the latter from the Secretary of Agriculture, Sydney; E. D. Merrill, *An enumeration of Philippine flowering plants*, vol. 3, fasc. 5, and *Bibliography of Polynesian Botany*; W. Mütze & C. K. Schneider, *Das Rosenbuch* (also a copy from Mr. W. J. Bean); Fr. Náběl̆ek, *Iter Turcico-Persicum*, pars 1 : *plantarum collectarum enumeratio*; T. Nakai, *Flora sylvatica Koreana*, pts. 13 & 14, from Director, Forestal Experiment Station, Government General of Chosen; *Nova Guinea : résultats des expéditions scientifiques à la Nouvelle Guinée*, vol. xiv., livr. 1, from the Maatschappij ter Bevordering van het Natuurkundig Onderzoek der Nederlandsche Kolonien; *Orchid Review*, 1924, from the Editor, Mr. Gurney Wilson; A. G. Perkin & A. E. Everest, *The natural organic colouring matters*, 1918; T. Petch, *Notes on Aristolochia* and other papers; K. Rangachari, *Practical Botany*, from Director of Agriculture, Madras; S. J. Record & C. D. Mell, *Timbers of Tropical America*; *Report of the Australasian Association for the Advancement of Science*, 1923, from the Association; *Report of the British Association*, &c., 1923, from Miss E. M. Wakefield; H. N. Ridley, *Flora of the Malay Peninsula*, vol. iii. & iv., from the Government of the Straits Settlements and Federated Malay States; J. F. Rock, *Field notes of the Rhododendrons collected by Rock in* 1924–24, from Major L. N. de Rothschild; S. Savage, *The Hortus Floridus of Crispijn vande Pas the Younger*; M. Skene, *The Biology of flowering plants*; C. Skottsberg (Editor), *The Natural History of Juan Fernandez and Easter Island*, Botany, pt. 3; J. J. Smith, *Illustrated Guide to the Botanic Gardens, Buitenzorg*; *Tafeln Javanischer Orchideen, II*, and numerous reprints, chiefly on Orchids; T. A. Sprague, 12 reprints of his papers in the *Journal of Botany* (2 copies of each); R. J. Stordy, *Survey of work of the Granja Modelo en Puno, May* 1921—*July*, 1923; *Studies from the Plant Physiological Laboratory of Charles University*, Prague, vol. i., from Prof. B. Němec; I. Thériot, 6 papers on Mosses; J. C. Th. Uphof, 22 papers; C. T. White, *Queensland trees*, nos. 17–26, and *Weeds of Queensland*, nos. 19–34, and other papers.

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